EFFECTIVE USE OF TEST TYPES FOR SOFTWARE DEVELOPMENT

F.H.A.R.Silva

149042M

Dissertation submitted in partial fulfillment of the requirements for the Master of Business Administration in Management of Technology

Department Of Management of Technology

University of Moratuwa

Sri Lanka

January 2016

Declaration

I certify this dissertation does not incorporate, without acknowledgement, any material previously submitted for a Degree or Diploma in any University and to the best of my knowledge and belief, it does not contain any material previously published or written by another person or myself except where due reference is made in the text.

Also I hereby grant to University of Moratuwa the non-exclusive right to reproduce and distribute my thesis/dissertation, in whole or in part in print, electronic or other med

…… Date:

Signature of the candidate

The above candidate has carried out the research for Masters Dissertation under my supervision.

…….... Date:

Signature of the supervisor

Name of the Supervisor: Eng. Kithsiri Samarasinghe

Abstract

The purpose of this study is to conduct an analysis on the effective use of test types for software development. The quality of the product is very important to satisfy clients and stay in business. Therefore software testing has become an important phase in the software development life cycle. As a result of the literature survey, the researcher has developed conceptual model and three hypotheses were derived based on the conceptual model. First three research objectives were accomplished by testing hypotheses using Pearson correlation and Regression analysis. Recommendation were given based on interview feedback, hypotheses output and descriptive statistical analysis. This study is conducted using a deductive approach. Data was collected from Quality Assurance professionals in Sri Lanka who are involved in Quality Assurance planning activities. The researcher has sent online questionnaire to collect raw data and also conducted interviews with quality assurance managers to identify their recommendations to use test types effectively. According to the hypotheses testing results it can be proved that there is an impact from testing constraints such as time, skills and poor requirements to test type selection and execution. It is also important to consider the application architecture type before selecting and executing test types. There is an impact from testing constraints to quality characteristics defined in ISO 9126 Model. In conclusion, when considering the result of this research, there is an impact from time constraints, skill constraint and poor requirements to the selection and execution of test types and limitation in testing of ISO 9126 quality characteristics. Most of the companies consider Web, Service, Mobile and Internet applications when select test types. So it is recommended to overcome time constraint with proper time management and skill constraints taking actions to improve skills.

Keywords: Test Types, ISO 9126 Model, Testing Constraints, Application Architecture Type

Acknowledgement

First I would like to extend my since gratitude to my supervisors Eng. Kithsiri Samarasinghe, Senior Lecturer of Department of Electronics and Telecommunication, University of Moratuwa for his precious support, advices and guidance given during the research.

I would like to express my gratitude to all academic and non- academic staff of Management of Technology Department in University of Moratuwa who helped in numerous way during the academic period.

I sincerely thank all IT professionals especially QA for extending their support by sending responses for questionnaire and assistance to research exercise. Special thanks goes to all interviewees who allocate time slot from their valuable time to conduct interviews and sharing their experiences.

I am thankful to MBA colleagues and friends who have given me tremendous support, continuous motivation and encouragement to make this success. Finally thank my parents for their patience, encouragements and assistance in making this success.

Table of Contents

List of Figures

List of Tables

List of Abbreviations

IT- Information Technology

QA-Quality Assurance

ICT- Information and Communication Technology

KPI- Key Performance Index

ISO- International Organization for Standardization

TDD- Test Driven Development

BDD- Behavior Driven Development

ROI- Return On Investment

ICTA- Information and Communication Technology Agency of Sri Lanka

SLASSCOM: Sri Lanka Association of Software Service Companies

TC- Testing Constraint

SC-Skill Constraint

PR- Poor Requirement

MA-Mobile Application

WA-Web Application

SA-Service Application

IA-Internet Application

SPSS - Statistical Software Package used for Statistical analysis

ANOVA- Analysis Of Variance